



1st Grade: Moon and More

Course Description: As the students learn the amazing patterns formed by celestial objects, like the Sun and Moon, our educators will enhance their learning experience by honing in on a classic pattern: the phases of the Moon. In this module, we will dive deep into the main tool in an astronomer's toolbox (and, arguably, the most important scientific invention of all time), the telescope. In addition, we will move into discussing how animals are divided into a few categories based on when they are active – diurnal, nocturnal, and crepuscular – and what this means for their morphology and behavior.

Day 1: One of the easiest patterns in our sky to observe are the phases of the Moon. In this lesson, we will teach the students about the phases of the moon and how the relationship between the earth, the sun, and the moon are the cause of those different phases. The phases have different names and the students will be introduced to this terminology.

Demonstration: *Students will become the Earth and use a pencil, Styrofoam ball, lamp, and their own motion to observe every phase of the Moon from a New Moon to a Waxing Gibbous. They will then be given a Moon Journal to record the phases of the moon they see over the next month.*

Day 2: While astronomical observations are important, the tools we use to make those observations are equally important. This class will teach students basic information about how telescopes are made and how they work.

Demonstration: *Students will get to make their own telescope tubes as we learn about the different pieces of a telescope. We will then take the kids outdoors and use a refracting telescope with a solar filter to directly observe the surface of the sun and look for sunspots and solar flares.*

Day 3: During this class we are going to talk about some of the biological differences between animals that are active at night, nocturnal, versus those that are active during the day, diurnal. We will explain how there are differences in how animals can see at night versus during the day and explain how animals have found ways to communicate in many different ways, including chemicals, sounds, and lights to compensate. We will discuss how bats are able to find their food and how the eyes of nocturnal animals don't have very good color vision but they are able to use a much smaller amount of light to see almost as well as we see during the day.

Demonstration: *We will bring in a selection of animals and ask the students to guess which of those animals are nocturnal and which are diurnal and why they make the choice that they do. Many of the nocturnal animals will be hiding / asleep during the day, which should help the students with guessing that they are used to being asleep during the day because they are nocturnal. To show students how difficult it is to communicate with each other without being able to see, we will play a game that helps students understand how fireflies communicate.*